AMATEUR SATELLITE REPORT

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AMSAT Board of Directors Election Results Told

AMSAT Director of Administration, Martha Saragovitz has announced the results of the 1988 Board of Directors elections. A total of four seats were up for election during this cycle. A total of 1773 ballots were cast. Those winning seats on the AMSAT Board were: Dr. Tom Clark, W3IWI with 1506 votes; Vern 'Rip' Riportella, WA2LQQ with 1395 votes; Phil Karn, KA9Q with 1045 votes and Andy MacAllister, WA5ZIB with 946 votes. W3IWI and WA2LQQ are incumbents on the board. Elected to the position of first alternate was John Henry, VE2VQ with 892 votes while Doug Loughmiller, KO5I was elected second alternate with 797 votes.

Short Bursts

• AO-13 Telemetry Decoding Program Available — Have you ever wondered what the PSK telemetry from AO-13's General Beacon was saying? Well now there is a computer program available from Project OSCAR which, in conjunction with the G3RUH 400 bps PSK modem, will let you decode the telemetry of OSCAR-13. Thanks to AMSAT-Australia, they have published P3C.EXE and Telem-13. P3C.EXE is for IBM PC compatibles and Telem-13 is for the Commodore C-64 computer. If you would like to obtain information about program availability, contact:

PROJECT OSCAR
P.O. BOX 1136
LOS ALTOS, CA 94023-1136

• Ross Forbes, WB6GFJ, President of Project OSCAR, is in need of a copy of the "Proceedings of the ARRL Technical Symposium on Space Communications," Reston, VA, September 1973 published by ARRL. Ross is in need of a original copy because he needs a reference copy for the Project OSCAR Museum. If you have a copy of these proceedings and wish to donate it, please forward it to:

AMSAT/OSCAR Archives
c/o Project OSCAR, Inc.
P.O. Box 1136
Los Altos, CA 94023-1136

• Congratulations go to John Biro, K1KSY, who has submitted the closest prediction for the re-entry of COSMOS 1900 to win the Chicken Little-II contest. The official re-entry time was October 2, 1988 at 01:26 UTC. John wins a GAS FET preamp.

• *AMSAT Technical Journal* Editor Bob Diersing, N5AHD reports that the next edition of the *ATJ* is now in the production process and will be available for distribution in a few weeks.

• Additional Net Control stations are needed in support of the Space Education Network which conducts nets via AMSAT-OSCAR 13. There is an immediate need for Mode L equipped stations. If you would like to volunteer please contact K.O. Learner, K9PVW at P.O. Box 5006, Kokomo, IN 46904 or via packet radio @KD9QB. Your help with this most worthy cause would be most appreciated.

Now that the cold weather is returning to the northern parts, can you remember this scene? Bob, KA2BZE, of Fairfield, New Jersey took this picturesque photo of his 2M and 70 cm arrays last winter. Time to check that antenna hardware before the snow flies.

FLASH!!!
Amateur Radio Operations From Aboard Mir Said To Be Imminent

AMSAT has learned that amateur radio operations from the Soviet space station Mir are about to commence. Reliable western European sources report that a 2 watt 2 meter FM transceiver has been placed aboard Mir, possibly during a recent resupply mission. Sources also indicate that the crew has placed a 1/4 wavelength ground-plane antenna on the outer surface of the space station.

U1MIR will be the call sign used by the Mir cosmonauts during these amateur radio communications. Amateur operations are expected to begin the first week of November.

A meeting was to be held in Moscow on Friday October 28th at which time Soviet authorities were to resolve schedule and frequency issues related to this activity. It is anticipated that a split frequency operation will be utilized to avoid potential QRM problems on U1MIR's downlink frequency.

Reports indicate that U1MIR will most probably be active for the duration of the stay of the current cosmonaut team aboard Mir. It is thought that when the current team of cosmonauts is replaced with a relief crew that a 10 watt 2 meter FM transceiver will be placed aboard Mir and the call sign of the operation changed to UØMIR.

Observers feel that operations from U1MIR/UØMIR will most likely involve amateur radio contacts on an international scale and not be limited to Soviet amateur radio operators alone.

AMSAT will provide further information as it becomes available. Watch *Amateur Satellite Report* for up-dated information on this latest Ham-in-Space activity.

Frank Bouldin, W5GAA; David Brinkerhoff, KB5EHS; Al Brinkerhoff, WB5PMR; Dave Cowdin, WDØHHU at a recent AMSAT breakfast meeting held in Dallas, Texas. (KO5I photo)

AMSAT Area Coordinator Bob Whitehurst, W4KDB (l.) and AMSAT Regional Coordinator Mack Jordan, W4DAQ (r.) answer questions at the AMSAT booth during the recent Birmingham, AL Hamfest.

Midwest Packet Balloon Mission a Big Success

Bill Brown, WB8ELK and Phil Frazier, KA8TEF conducted the most successful amateur radio balloon launch to date from the Midwest on Sunday October 23. The package consisted of an Icom 2AT and Pac-Comm TNC. The package lifted off at about 9:30 AM EDT and provided 2 hours of energetic packet activity before the balloon burst and a parachute gently lowered the package back to earth.

Some amateurs were satisfied with a simple connection with the balloon while others, running high power levels were able to work as many as eight states with the balloon serving as digipeater. Unfortunately, as we in satellite communications well know, the hi-power operators kept many from enjoying the mission who would have otherwise made connects. The flexibility of packet operation did allow many stations to serve as gateways to the balloon for the low power local operators. All in all, the enthusiasm over packet operations was high and showed that the packet operating mode is here to stay. The range of operations extended out to 400 miles from the launch site at Findlay, OH.

WB8ELK reported that as of Monday October 24th the package had not been found but the search area had been narrowed down with eventual recovery of the package expected.

UO-11 DCE Gateway In The Antarctic

by Sjoerd Jongens, ZL5BA

Outside is a roaring blizzard gusting to more than 80 knots. The temperature rises from -35C to a "balmy" -10C when the wind is calm. But that still makes the experience to exposed flesh, corrected with the wind-chill factor, the

equivalent of lower than -36C. But who cares? So long as the antennas survive, one just puts one's feet on the linear amplifiers and calls "CQ OSCAR." That is the scene of the southernmost amateur station with DCE (Digital Communication Experiment) gateway capabilities here in Antarctica.

When Greenpeace was getting organized for a base in the Antarctic a few years ago, it seemed a good idea to fit it out with ham radio gear both for emergency as well as for social communications purposes. This is in addition to the commercial satellite system (INMARSAT) and the commercial HF telex system (SITOR). The geo-stationary satellite used by INMARSAT is a bit hard to access at the southern location of "World Park Base" at 77 degrees 38.1 minutes South, and 166 degrees 24.6 minutes East. So the obvious alternative was to experiment with polar orbiting satellites and the UoSATs came to mind.

During the first year of operation (1987), we experienced some hardware problems. It turned out that the antenna rotator couldn't stand up to the conditions found on site. During 1988 upgrades were gradually implemented yielding an almost automatic OSCAR station. I gingerly downloaded the first messages at 08:35 UTC on the 29th of July 1988.

Bob Rogers, W8JLE and Keith Pugh, W5IV at Dayton '88. (KO5I photo)

After getting the hang of things, I uploaded the "hurray" message to G0/K8KA at 17:23 UTC.

The long time gap between those two accesses indicates the interesting effect of being located near the poles. Theoretically, we can "see" the satellite on each and every orbit. The visibility varies from 11 to 16 minutes. However, the surrounding mountainous terrain, covered with reflective snow and ice-layers, limits the practical access periods during the lower elevation passes. Passes below 20 degrees elevation are severely affected by multi-path fading. And then we have this monster of an obstruction to our northeast: Mount Erebus.

However, we use Mount Erebus as a passive VHF/UHF reflector for QSO's with nearby Scott Base which is New Zealand's research station. We are lucky to have a number of active hams there this year. Even though they are only 25 km SSE from us, we have no line-of-sight path and VHF hand-held access is almost impossible. We have discovered that if both of us beam towards Mt Erebus, we can get S9+ signals. Interestingly, the bounce is very frequency-dependant and it changes after a fresh snow build-up. The signal varies from S1 to S9+, just by QSY-ing 100 kHz. In any case, ZL5BA is also a DCE gateway to ZL5BKM (Alan), ZL5CCV (Paul), ZL5TFM (Malcolm) and ZL5AP (Stan). Pitty they take their VHF/UHF and Pakratt gear with them when they go home next October. Let's hope for hams in the replacement team!

To return to our DCE station, it's very well equipped; much better than I could afford at my home QTH. The VHF rig is an ICOM IC-271H and the UHF rig is an ICOM IC-471H. To run the DCE operation, two industry-compatible computers are used: one for the control of the antenna rotator and one to command the UoSAT for uploading and downloading the messages and control of the PTT's. The software used for the pass predictions with EGA colored footprint display and real-time rotator control calculations is Graftrak II, which requires an 8087 math co-processor.

The grease in the Kenpro KR-5600B azimuth/elevation rotator was replaced with low-temperature silicone grease which should lower its minimum operating temperature from the original -25C to -73C. We were also limited in the length of the VHF cross-yagi to 2x7 elements to reduce the effect of wind loading. The UHF cross-yagi is 2x9 elements. The rotator/computer RS232 interface is Mirage's MTI.

Well, that's about it from us down here. Just keep those messages rolling in! I am sending our fortnightly journals on the personal experiences of the four of us down here via DCE to GB3UP's BBS and you are welcome to read them, and send us any comments on them. Of course, this article was also sent by the UO-11 DCE.

[Relayed to *ASR* via E-Mail]

Orbit Predictions

Satellite	Oscar-9
Catalog number	12888
Epoch time:	88285.09774348
Element set:	327
Inclination:	97.6054 deg
RA of node:	321.6080 deg
Eccentricity:	0.0001255
Arg of perigee:	34.4121 deg
Mean anomaly:	325.7259 deg
Mean motion:	15.36110723 rev/day
Decay rate:	2.5709e-04 rev/day²
Epoch rev:	39051

Satellite	Oscar-11
Catalog number	14781
Epoch time:	88279.14020829
Element set:	352
Inclination:	98.0439 deg
RA of node:	339.0661 deg
Eccentricity:	0.0014642
Arg of perigee:	44.5398 deg
Mean anomaly:	315.7023 deg
Mean motion:	14.62461626 rev/day
Decay rate:	1.207e-05 rev/day²
Epoch rev:	24525

Satellite	Oscar-10
Catalog number	14129
Epoch time:	88279.13132343
Element set:	358
Inclination:	27.1079 deg
RA of node:	301.3539 deg
Eccentricity:	0.6034945
Arg of perigee:	342.1045 deg
Mean anomaly:	3.6398 deg
Mean motion:	2.05880749 rev/day
Decay rate:	-8.2e-07 rev/day²
Epoch rev:	3996

Satellite	Oscar-12
Catalog number	16909
Epoch time:	88279.26846706
Element set:	115
Inclination:	50.0147 deg
RA of node:	1.9211 deg
Eccentricity:	0.0011139
Arg of perigee:	58.6669 deg
Mean anomaly:	301.5254 deg
Mean motion:	12.44395542 rev/day
Decay rate:	-2.5e-07 rev/day²
Epoch rev:	9766

Satellite	Oscar-13
Catalog number	19216
Epoch time:	88273.72660805
Element set:	19
Inclination:	57.5382 deg
RA of node:	237.5900 deg
Eccentricity:	0.6578369
Arg of perigee:	191.3601 deg
Mean anomaly:	139.7626 deg
Mean motion:	2.09697959 rev/day
Decay rate:	3.0e-07 rev/day²
Epoch rev:	226

Satellite	meteor 2-15
Catalog number	17290
Epoch time:	88284.60590544
Element set:	194
Inclination:	82.4672 deg
RA of node:	353.9480 deg
Eccentricity:	0.0011922
Arg of perigee:	240.6283 deg
Mean anomaly:	119.3699 deg
Mean motion:	13.83612537 rev/day
Decay rate:	1.81e-06 rev/day²
Epoch rev:	8910

Satellite	mir
Catalog number	16609
Epoch time:	88291.64513306
Element set:	460
Inclination:	51.6150 deg
RA of node:	158.4827 deg
Eccentricity:	0.0024915
Arg of perigee:	202.3449 deg
Mean anomaly:	157.7286 deg
Mean motion:	15.74171102 rev/day
Decay rate:	3.3749e-04 rev/day²
Epoch rev:	15311

Satellite	noaa-9
Catalog number	15427
Epoch time:	88290.41808384
Element set:	289
Inclination:	99.1127 deg
RA of node:	266.9984 deg
Eccentricity:	0.0014837
Arg of perigee:	277.5016 deg
Mean anomaly:	82.4488 deg
Mean motion:	14.11667359 rev/day
Decay rate:	3.94e-06 rev/day²
Epoch rev:	19805

Satellite	RS-10/11
Catalog number	18129
Epoch time:	88284.82802172
Element set:	536
Inclination:	82.9251 deg
RA of node:	62.3349 deg
Eccentricity:	0.0012382
Arg of perigee:	30.1296 deg
Mean anomaly:	330.0614 deg
Mean motion:	13.71910488 rev/day
Decay rate:	1.189e-05 rev/day²
Epoch rev:	6520

Satellite	meteor 2-16
Catalog number	18312
Epoch time:	88289.80839300
Element set:	161
Inclination:	82.5554 deg
RA of node:	53.1604 deg
Eccentricity:	0.0014824
Arg of perigee:	146.0147 deg
Mean anomaly:	214.2066 deg
Mean motion:	13.83361602 rev/day
Decay rate:	-2.06e-06 rev/day²
Epoch rev:	5872

Satellite	salyut-7
Catalog number	13138
Epoch time:	88291.64910736
Element set:	272
Inclination:	51.6114 deg
RA of node:	57.7375 deg
Eccentricity:	0.0001037
Arg of perigee:	212.5407 deg
Mean anomaly:	147.5013 deg
Mean motion:	15.34227109 rev/day
Decay rate:	1.9565e-04 rev/day²
Epoch rev:	37087

Satellite	noaa-10
Catalog number	16969
Epoch time:	88288.93955558
Element set:	164
Inclination:	98.6707 deg
RA of node:	317.8308 deg
Eccentricity:	0.0012762
Arg of perigee:	240.8110 deg
Mean anomaly:	119.1793 deg
Mean motion:	14.22652352 rev/day
Decay rate:	4.70e-06 rev/day²
Epoch rev:	10906

Satellite	meteor 2-14
Catalog number	16735
Epoch time:	88284.92897553
Element set:	258
Inclination:	82.5333 deg
RA of node:	84.5773 deg
Eccentricity:	0.0014640
Arg of perigee:	357.5254 deg
Mean anomaly:	2.5832 deg
Mean motion:	13.83799815 rev/day
Decay rate:	9.7e-07 rev/day²
Epoch rev:	11998

Satellite	meteor 2-17
Catalog number	18820
Epoch time:	88284.99161805
Element set:	60
Inclination:	82.5422 deg
RA of node:	118.5807 deg
Eccentricity:	0.0015781
Arg of perigee:	249.4413 deg
Mean anomaly:	110.5054 deg
Mean motion:	13.84045100 rev/day
Decay rate:	8.4e-07 rev/day²
Epoch rev:	3521

Satellite	ajisai
Catalog number	16908
Epoch time:	88278.72158422
Element set:	104
Inclination:	50.0103 deg
RA of node:	3.4156 deg
Eccentricity:	0.0011036
Arg of perigee:	56.1548 deg
Mean anomaly:	304.0335 deg
Mean motion:	12.44371772 rev/day
Decay rate:	-4.9e-07 rev/day²
Epoch rev:	9760

Satellite	noaa-11
Catalog number	19531
Epoch time:	88284.70644747
Element set:	13
Inclination:	98.9065 deg
RA of node:	224.3604 deg
Eccentricity:	0.0011407
Arg of perigee:	213.6164 deg
Mean anomaly:	146.4284 deg
Mean motion:	14.10645068 rev/day
Decay rate:	5.02e-06 rev/day²
Epoch rev:	229

AMSAT® NA

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